[0025] U.S. patent application Ser. No. 12/649,681 (G85) is also a Continuation-in-Part of U.S. patent application Ser. No. 12/347,984, filed Dec. 31, 2008 and entitled Pump Assembly With Switch, now U.S. Pat. No. 8,414,563, issued Apr. 9, 2013 (Attorney Docket No. G79), which is hereby incorporated herein by reference in its entirety, which application also claims priority from the following U.S. Provisional Patent Applications, all of which are hereby incorporated herein by reference in their entireties:

[0026] U.S. Provisional Patent Application Ser. No. 61/018,054, filed Dec. 31, 2007 and entitled Patch Pump with Shape Memory Wire Pump Actuator (Attorney Docket No. E87);

[0027] U.S. Provisional Patent Application Ser. No. 61/018,042, filed Dec. 31, 2007 and entitled Patch Pump with External Infusion Set (Attorney Docket No. E88);

[0028] U.S. Provisional Patent Application Ser. No. 61/017,989, filed Dec. 31, 2007 and entitled Wearable Infusion Pump with Disposable Base (Attorney Docket No. E89);

[0029] U.S. Provisional Patent Application Ser. No. 61/018,002, filed Dec. 31, 2007 and entitled Patch Pump with Rotational Engagement Assembly (Attorney Docket No. E90);

[0030] U.S. Provisional Patent Application Ser. No. 61/018,339, filed Dec. 31, 2007 and entitled System and Method for Controlling a Shape-Memory Actuator (Attorney Docket No. E91);

[0031] U.S. Provisional Patent Application Ser. No. 61/023,645, filed Jan. 25, 2008 and entitled Infusion Pump with Bolus Button (Attorney Docket No. F49);

[0032] U.S. Provisional Patent Application Ser. No. 61/101,053, filed Sep. 29, 2008 and entitled Infusion Pump Assembly with a Switch Assembly (Attorney Docket No. F73);

[0033] U.S. Provisional Patent Application Ser. No. 61/101,077, filed Sep. 29, 2008 and entitled Infusion Pump Assembly with a Tubing Storage (Attorney Docket No. F74);

[0034] U.S. Provisional Patent Application Ser. No. 61/101,105, filed Sep. 29, 2008 and entitled Improved Infusion Pump Assembly (Attorney Docket No. F75); and

[0035] U.S. Provisional Patent Application Ser. No. 61/101,115, filed Sep. 29, 2008 and entitled Filling Apparatus and Methods for an Infusion Pump Assembly (Attorney Docket No. G08).

FIELD OF THE INVENTION

[0036] This application relates generally to fluid delivery systems, and more particularly to apparatus, system and method for fluid delivery.

BACKGROUND OF THE INVENTION

[0037] Many potentially valuable medicines or compounds, including biologicals, are not orally active due to poor absorption, hepatic metabolism or other pharmacokinetic factors.

Additionally, some therapeutic compounds, although they can be orally absorbed, are sometimes required to be administered so often it is difficult for a patient to maintain the desired schedule. In these cases, parenteral delivery is often employed or could be employed.

Effective parenteral routes of drug delivery, as well as other fluids and compounds, such as subcutaneous injection, intramuscular injection, and intravenous (IV) administration include puncture of the skin with a needle or stylet. Insulin is an example of a therapeutic fluid that is self-injected by millions of diabetic patients. Users of parenterally delivered drugs may benefit from a wearable device that would automatically deliver needed drugs/compounds over a period of time.

[0038] To this end, there have been efforts to design portable and wearable devices for the controlled release of therapeutics. Such devices are known to have a reservoir such as a cartridge, syringe, or bag, and to be electronically controlled. These devices suffer from a number of drawbacks including the malfunction rate. Reducing the size, weight and cost of these devices is also an ongoing challenge. Additionally, these devices often apply to the skin and pose the challenge of frequent re-location for application.

SUMMARY OF THE INVENTION

[0039] In accordance with one aspect of the present invention a fill adapter for filling a reservoir is disclosed. The fill adapter includes a button assembly actuator and a pump chamber plunger actuator hingeably attached to the button assembly actuator, wherein the actuation of the button assembly actuator actuates the pump chamber plunger actuator and wherein the pump chamber plunger actuator actuates a pump chamber membrane before the at least one button assembly is actuated.

[0040] Some embodiments of this aspect of the invention include one or more of the following. Where the fill adapter further includes a filling aid wherein said filling aid is attached to the fill adapter base and wherein the filling aid accommodates a syringe. Wherein the fill adapter is adapter to connectably attach to a reservoir assembly wherein upon attachment, the reservoir assembly may be filled by a syringe. Wherein the button assembly further comprising at least one button assembly. Wherein the filling aid is removably attached to the fill adapter.

[0041] In accordance with one aspect of the present invention a fill adapter base is disclosed. The fill adapter base includes a button assembly actuator for actuating at least one button assembly and a pump chamber plunger actuator hingeably attached to the button assembly actuator wherein the actuation of the button assembly actuator actuates the pump chamber plunger actuator and wherein the pump chamber plunger actuator actuates a pump chamber membrane before the at least one button assembly is actuated.

[0042] Some embodiments of this aspect of the invention include one or more of the following. Wherein the fill adapter base further includes a filling aid wherein said filling aid is attached to the fill adapter base. Wherein the filling aid is removably attached to the fill adapter base. Wherein the filling aid is hingeably attached to the fill adapter base. Wherein the pump chamber actuator is hingeably attached to the button assembly actuator through a living hinge. Wherein the pump chamber actuator is hingeably attached to the button assembly actuator through a pivot hinge. Wherein the button assembly actuator actuates at least three button assemblies.

[0043] In accordance with one aspect of the present invention a fill adapter system for filling a reservoir is disclosed. The fill adapter system includes a fill adapter base includes a button assembly actuator for actuating at least one button